DOCUMENT RESUME

ED 110 250 RC 008 698

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TITLE Determinants of Educational Performance in Southern Brazil.
SPONS AGENCY Ford Foundation New York, N.Y.; Universidade Federal do Rio Grande d Sul, Porto Alegre (Brazil).
REPORT NO Ford-729-0245-S-2
PUB DATE 24 Aug 75
NOTE 41p.; Paper presented at the Annual Meeting of the Rural Sociological Society, San Francisco, California, August 21-24, 1975

EDRS PRICE MF-$0.76 HC-$1.95 PLUS POSTAGE
DESCRIPTORS *Academic Achievement; Academic Aspiration; *Aspiration; Correlation; *Elementary Grades; Grade 5; *Intelligence; Occupational Aspiration; Performance Factors; Rural Areas; *Socioeconomic Status; Urban Areas
IDENTIFIERS *Brazil

ABSTRACT

The study examined the effects of socioeconomic origin (SES) and mental ability (MA) on levels of educational (EA) and occupational aspiration (OA), academic performance (AP), and significant others' influence (SOI) for 1,950 5th grade elementary and 4th year gymnastic students in Rio Grande do Sul, Brazil. Representative samples of approximately 250 students were drawn at each level from 4 counties varying by the physical presence of higher educational institutions. Assumptions buttressing the model were questioned for this sample, and effects of SES and MA on the performance variables were hypothesized to vary by grade level. Specifically, it was hypothesized that due to the heavy screening of students by SES prior to the secondary level, the effect of MA would increase and that of SES decrease at the gynasium level. It was further hypothesized that AP and SOI would exercise more important roles as intervening variables between SES and MA, and the aspiration variables at the gymnasium level. Data were obtained from closed-ended questionnaire items; where operational equivalents were impossible to use or were deemed less appropriate, functional equivalents were used. Working hypotheses were tested using path and path regression coefficients. SES was found to increase in importance as a determinant of EA and OA, and the mediating effects of SOI and AP between SES and EA decreased at the gymnasium level. (Author/NQ)

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Determinants of Educational Performance in Southern Brazil

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Paper presented at the Annual Meeting of the Rural Sociological Society; August 21 - 24, 1975; San Francisco, California.

* This research was supported in part by grants from the Ford Foundation - #729-0245-S-2, and the Rio Grande do Sul Research Support Foundation (FAPERGS) - #165/73. It also benefited greatly from support from the Institute of Economic Studies and Research of the Federal University of Rio Grande do Sul, Porto Alegre, Brazil, and the Brazilian Agricultural Research Enterprise (EMBRAPA), through its Data Processing Center.

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Abstract

Determinants and consequences of educational performance have been widely researched in the United States. Less is known about them in other nations, particularly those classified as "developing." This paper contains an examination of the effects of socioeconomic origin (SES) and mental ability (MA) on levels of educational (EA) and occupational aspiration (OA), academic performance (AP), and significant others' influence (SOI) for a sample of school age children in Southern Brazil. The analysis was guided by a social psychological model of status attainment developed by Sewell and associates at the University of Wisconsin. Assumptions buttressing the model were questioned for this sample, and effects of SES and MA on the performance variables were hypothesized to vary by grade level. Specifically, it was hypothesized that due to the heavy screening of students by SES prior to the secondary level, the effect of MA would increase and that of SES decrease at the gymnasium level. It was further hypothesized that AP and SOI would exercise more important roles as intervening variables between SES and MA, and the aspiration variables at the gymnasium level. A total of 1,950 group interviews were taken of 5th grade elementary and 4th year gymnasium students in Rio Grande do Sul, Brazil. Representative samples of approximately 250 students were drawn at each level from four counties varying by the physical presence of higher educational institutions. Measures of study variables were elaborated parting from those devised by Sewell and

his associates and using data from closed-ended questionnaire items. Where operational equivalents were impossible to use or were deemed less appropriate, functional equivalents were employed. The working hypotheses were tested using path and path regression coefficients. Contrary to them, SES was found to increase in importance as a determinant of EA and OA, and the mediating effects of SOI and AP between SES and EA decreased at the gymnasium level. The preponderant role of SES at both levels suggests that ascriptive factors play a dominant role in formulating aspirations for the sample. Whether in fact they exercise the same role in determining levels of educational and occupational status attainment is a moot question. Its answer must await future follow-ups of the sample.

Determinants of Educational Performance in Southern Brazil

A number of significant sociological studies have been conducted in the United States on determinants of educational variables involved in the stratification process [Alexander and Campbell, 1964; Boehlen and Yoesting, 1968; Bordua, 1960; Coleman, et. al., 1966; Duncan, et. al., 1972; Duncan, Haller and Portes, 1968; Flanegan, et. al., 1964; Haller and Butterworth, 1960; Harrison, 1969; Hauser, 1971; Herriott, 1963; Jencks, et. al., 1972; Kahl, 1953; Kandel and Lesser, 1969; Kuvlesky and Bealer, 1967; Sewell and Hauser, 1975; Sewell, Haller and Strauss, 1957; Sewell and Shah, 1967, 1968a, 1968b; Slocum, 1967]. Most examined their relationship to socioeconomic origin and/or native mental ability.

Several years ago, Sewell and his associates [1969, 1970] extended this line of research by developing a comprehensive model that linked status attainment to social-psychological, educational performance variables.[1] Their model is generally recognized as one of the most comprehensive summaries of the literature of this area. Although based only on a sample from Wisconsin, the directions and magnitudes of relationships found among variables of the model are probably quite representative of the entire United States. Indeed the literature on which it was built resulted from samples of other geographical areas, and recent comparisons of their findings with those based on other samples show them to be very

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[1] Hauser [1970] sorts educational variables involved in the stratification process into four categories: background variables, school variables, educational outcomes, and consequences of education. Performance variables are here defined as school variables and educational outcomes.

similar [Sewell and Hauser, 1975].

Less is known about how variables in the model operate in other cultures and nation-states [Hansen and Haller, 1973]. The line of inquiry followed in this paper is one of interpreting the validity of the model as an explanation of the relationship between background and educational performance in Southern Brazil.[2]

Prior to reviewing it in this different context, however, let us briefly go over its content. The model is presented in Figure 1. It asserts that inequalities are ultimately founded in differences in socioeconomic origin and mental ability which are associated. No causal inter-

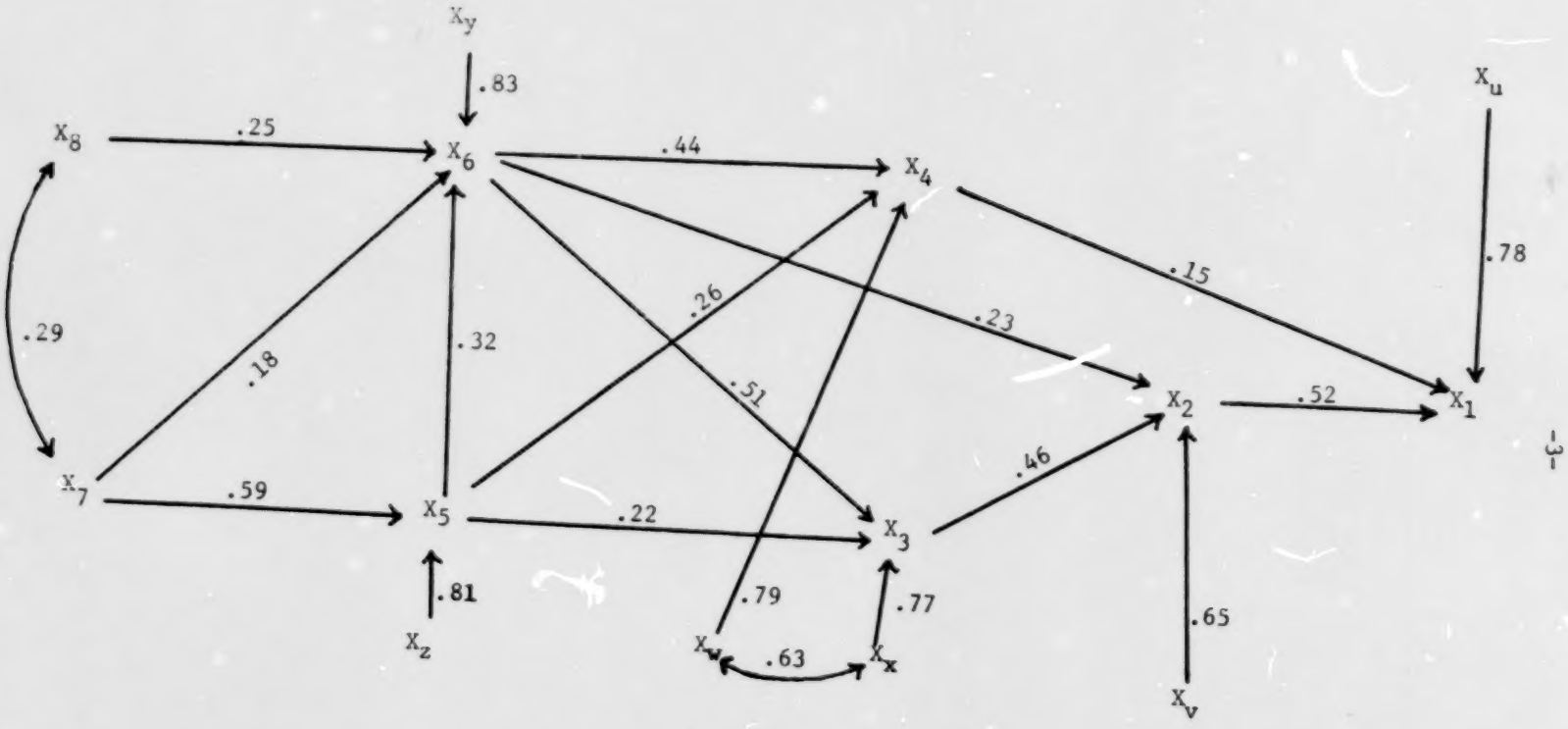
PLACE FIGURE 1 ABOUT HERE

pretation is made of the relationship between these forces. Mental ability in turn affects academic performance and level of significant others' influence. Socioeconomic status also affects the significant others' influence variable. The latter has a strong direct effect on levels of educational and occupational aspirations and on level of educational attainment. These same variables are causally affected by academic performance. The aspiration variables are associated with one another and have direct causal effects on their respective attainment variables, occupational aspirations also causally affecting level of educational attainment.

The analysis first concentrates on relationships between the background and performance variables in general. Parting from this, an

[2] A number of other variables have been identified and analyzed as performance variables and their determinants. Among the performance variables are achievement motivation, organizational participation, self concept, self-esteem, etc. Other determinants include parental status inconsistency, family size and structure, place of residence, family values, etc. This analysis will focus on those in the Sewell et al. model because they provide a parsimonious and comprehensive description of status transmission between generations.

Figure 1: Wisconsin Model of Status Transmission between Generations [Sewell et al., 1970].



X_8 - Socioeconomic Status

X_7 - Mental Ability

X_6 - Significant Others' Influence

X_5 - Academic Performance

X_4 - Level of Occupational Aspiration

X_3 - Level of Educational Aspiration

X_2 - Level of Educational Attainment

X_1 - Level of Occupational Attainment

ZOOO7

attempt is made to assay the validity of the causal paths found in the original model for the sample under scrutiny. This is realized in light of several structural conditions that vary between developed and developing countries, and probably affect relationships between variables in the model.

Brazilian Education:

A number of differences exist between the educational systems of Brazil and the United States. Perhaps the most important is the relatively closed character of that of Brazil. A rapid expansion of its secondary and higher educational systems did not commence until the 1950's when Brazil's industrial sector expanded measurably. Cunha [1973] argues that expansion was at once an economic and a social phenomenon. Rapid growth of bureaucracies in the secondary and tertiary sectors of the Brazilian economy resulted from accumulation of capital in the hands of the state and entrepreneurial sectors. Positions were created that could be adequately filled only by individuals possessing a middle level education. At the same time, the opening of small businesses, which was the previous dominant form of entry into the middle classes, became less feasible, as they were unable to compete effectively with larger enterprises. Thus, the socially mobile middle class and middle class aspirants turned to the educational system as their major channel for mobility. Teixeira [1970] argues that it was during the 1950's that they gained control of the Brazilian educational system, manifesting their interests in the 1960 Law of Educational Directives and Bases. The educational system became one of the principal vehicles of social mobility in Brazilian society during

this period.[3]

Of course, the residual effects of the preceding social structure are quite important in shaping the type of education being offered today. For one, there is an overwhelming preference for traditional academic secondary programs which provide access to university training. In the past, those who entered school received instruction at each level more appropriate to advancing to the following level than to coping with their immediate environment. The elite entered school to validate their status and normally followed its program through professional training. The masses did not enter, or if they did, dropped out after a short period. Both groups saw formal education as a validation of elite status. This mentality is reflected in the current overwhelming demand for academic secondary courses.

Whereas marked changes have occurred in the Brazilian educational system during the last two decades, vast differences remain between it and that of the United States, particularly in terms of the length of schooling experienced by youth. In Brazil, the great majority still do not complete the five year elementary school program, fewer still enter high school, and only a privileged few finish college.

In large part, the selectivity occurring between grade school and high school is due to the fact that most high schools are private. Attendance is greatly dependent on the family's ability to afford sending their children to school. Complementary to this, public high schools offering free education are prone to discriminate against youth from lower socio-

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[3] Heimer [1975], in an historical analysis of the relationship between education and polity in Brazil, contends that the educational system's societal role has always been that of reinforcing the social dynamics prevailing at any given moment.

economic strata. As there is considerable competition for these openings, they tend to select academically superior candidates who normally were blessed with more advantageous early learning environments and who come in great part from the higher socioeconomic strata.

Hypotheses:

The preponderance of socioeconomic origin in screening students between elementary and secondary levels probably has ramifications for the way origin and mental ability are related to specific performance variables at the individual level. It is probable that the role of family origin diminishes and that mental ability's role becomes proportionately greater at the secondary level.

At the elementary level, encouragement for youth to continue their studies is probably less associated with mental ability simply because of the overwhelming role of family origin. As was already mentioned, much of secondary education is private which implies considerable inputs of family resources for children to proceed to this level. Parents in particular would probably be most sensitive to this, and encourage or discourage their children accordingly. Teachers may also be inclined to extend or withhold encouragement according to their realistic appraisal of a student's chances for continuing his education.

Once in secondary school, the situation is likely to change. All federal universities are free and, therefore, more accessible to less privileged children. In addition, children from most humble origins have already dropped out which implies that those remaining have more equal opportunities of being sponsored by their families in continued educational endeavors. Thus, it is plausible to reason that family origin becomes less of a factor in determining encouragement levels, and that the student's

own ability increases in significance. More competition is likely to occur for entrance into post-secondary institutions, and the amount of encouragement received from definers is likely to depend more on the student's ability at this level than at the elementary level.

Classroom grades are probably a function of both family origin and actual performance at the elementary level. Even were it not true that teachers tend to grade on the basis of performance, without taking into account personal appearance, mannerisms, dress, and other factors associated with family status, performance itself is probably related to the student's home environment by the fifth year of study. Those from higher status homes have probably benefited from learning materials such as educational toys and books that their parents could afford to give them. It is also likely that they have benefited from assistance from their parents in preparing lessons, etc. One might expect the impact of these advantages to be reduced at the secondary level, however, since the poorest students whose parents were least able to assist their children have already left the system.

A similar argument can be made for the effects of family origin and ability on educational and occupational aspirations. At the elementary level, children from more humble origins are less apt to aspire to high levels of educational attainment and more prestigious occupations simply because of the economic barriers that confront them. This tendency probably is reinforced by others forming a part of their living environment defining their chances as being low. For youth from higher status backgrounds, of course, the situation tends to be reversed.

The few students from lower socioeconomic origin who have surpassed the obstacles generated by their origin are likely to possess extremely

high aspirations and a firm commitment to attaining them. Thus, there is likely to be less variation in aspirations at this level. Students, as they progress through this level, are likely to become more aware of the importance of their own performance in gaining entrance to higher educational institutions, at least to those that are free. Scholastic ability is likely to become a more important determinant of their formation of individual aspirations as a consequence. To the extent that prestigious occupations depend on receiving a college education, occupational aspirations are likely to be more greatly influenced by their own appraisal of their learning ability.

To capsulize this rationale, at the elementary level performance is argued to be almost entirely a function of socioeconomic origin. The causal effects of mental ability increase as the student progresses into the secondary level and beyond.

In line with the above rationale, the following working hypotheses are advanced:

1. The effect of socioeconomic status on the performance variables will be greater at the elementary level than at the gymnasium level.
2. The effects of mental ability on the performance variables will be greater at the gymnasium level than at the elementary level.
3. Significant others' influence and academic performance will exercise a greater effect on the aspiration variables at the gymnasium level than at the elementary level.
4. The increase from the elementary to the gymnasium level in the effect of mental ability on the performance variables will be greater than that of socioeconomic origin.

Sample and Data Gathering:

Interviews were taken in four counties of Rio Grande do Sul, Brazil during 1973. The counties were stratified according to their possession of higher education institutions, one containing only a gymnasium,[4] one a full high school but no college, one a community college, and one a full university. All were between 60-80 percent urbanized. The exact sample breakdown is presented in Table 1. Representative samples of approximately 250 cases were taken at the 5th year elementary and 4th year gymnasium levels in each county, the total number of cases summing to 1950. Schools included in the sample were selected using a number of criteria, most having previously been employed by Havighurst and Gouveia [1968] in an exhaustive five state study of middle level schooling in Brazil. They included funding source (private vs. public), time of class (day vs. evening), sex composition of school (segregated vs. mixed), type of curriculum offered (academic, agricultural, industrial, etc.), rural-urban location, and socioeconomic composition of student body. In most counties, each subsample included students from each possible alternative of applicable criteria. Checks were made using census material and indicate the samples to be quite representative.[5]

PLACE TABLE 1 ABOUT HERE

Data were gathered using pretested questionnaires that were completed by students in selected classrooms under the supervision of project team members. Most questionnaire items had been used previously in studies in Brazil and other Latin American countries. Data were coded by team mem-

[4] The gymnasium is roughly equivalent to U.S. junior high school.

[5] For a detailed analysis of the sample, see Hansen [1975].

Table 1: Sample Sizes by Grade Level and County

County	Grade Level	
	Elementary	Gymnasium
Butia	274	218
Carazinho	258	235
Alegrete	235	238
Pelotas	255	237
Total	1,022	928

Table 2: Correlation Matrix for Items of Socioeconomic Status Index and Stability Estimates

	X_1	X_2	X_3	X_4	X_5	$r_{t_1t_2}$
Father's Occupation - X_1	---					.54
Father's Education - X_2	.42	---				.93
Father's Income - X_3	.41	.43	---			.76
Level of Living - X_4	.45	.50	.54	---		.66
Socioeconomic Status- X_5	.74	.76	.77	.81	---	.79

bers, punched onto IBM cards and transferred to tape for processing. Analyses were conducted using two statistical packages, BASIS and SAS.

Variable Indicators:

Indicators of study variables were developed parting from those used by Sewell et al. [1969]. In most cases it was not possible to construct empirical equivalents and functional alternatives were used.

Socioeconomic Origin (SES) - A summary index consisting of father's education, occupation and income, and family level of living was used to represent this variable.[6] Level of living is not found in the Sewell et al. [1969] measure. However, it was shown to be the best summary index available to measure status in Central [Haller and Saraiva, 1972] and Southern Brazil [Hansen, 1972] and, therefore, was deemed important to include. The correlation matrix for these items is presented in Table 2. All correlations are approximately equal, although that of level of living is highest with the other variables. An alpha coefficient [Bohrnstedt, 1969] of internal consistency among the items equals .77 for the matrix.

PLACE TABLE 2 ABOUT HERE

Mental Ability (MA) - The G-36, an IQ test developed by Boccalandro [1966], in São Paulo, Brazil was administered to all students in the sample. It consists of a battery of 36 culture-free analogy items. Mean scores for the elementary and gymnasium samples were 8.10 and 15.20, respectively. The higher scores for the gymnasium sample are not surprising since test scores are known to vary by age. The test yielded a split-half reliability coefficient of .81 that increased to .90 when corrected for

[6] Index formed by combining standardized scores for the items.

attenuations using the Spearman-Brown formula. No validity tests were made of the battery, although it was previously shown to correlate at .84 with another intelligence test developed in Brazil [Boccalandro, 1966].

Significant Other's Influence (SOI) - Significant other's influence was measured using an index formed by summing the standardized scores of four perception variables. These were perceived encouragement of father, mother, and teachers to continue studies, and the perceived educational plans of best friends. The correlation matrix for these items and the summary index is found in Table 3. There is considerable variation in the size of correlations, the parental items correlating highest with

PLACE TABLE 3 ABOUT HERE

others and that of friends' educational plans lowest. Stability measures for each item show that the measures are less reliable at the elementary level. An alpha coefficient computed from the matrix was .624.

Academic Performance (AP) - Academic ability was measured using a mean of scores of several more important disciplines, including Arithmetic, Portuguese, and Science. Although comparable to the Sewell and associates measure, serious reservations were lodged by social scientists and educators of the Federal University of Rio Grande do Sul. They felt that grades are more likely to measure other variables such as classroom behavior, student personality characteristics, and family origin. However, an exhaustive search of the literature failed to yield alternative achievement test measures for Brazil. In any event, it is likely their reservations also apply to a certain degree to the United States. Grades were transcribed by the school secretarial staff from school records.

Table 3: Correlation Matrix for Items of Significant Others' Influence Index and Stability Estimates

		X_1	X_2	X_3	X_4	X_5	$r_{t_1t_2}$ E	G	T
Father's Encouragement	- X_1	---					.37	.59	.42
Mother's Encouragement	- X_2	.70	---				.29	.53	.37
Teacher's Encouragement	- X_3	.30	.28	---			.07	.55	.22
Friend's Educational Plans	- X_4	.15	.18	.15	---		.25	.53	.45
Significant Others' Index	- X_5	.78	.79	.63	.54	---	.30	.61	.41

• E - Elementary sample; G - Gymnasium sample; T - Total sample.

Level of Educational Aspiration (LEA) - Educational aspiration was measured using a single item which measured expectations for continued study. This was whether or not the student thought he would be able to continue his studies. The stability coefficient for a combined sample was .40.

Level of Occupational Aspiration (LOA) - Occupational aspiration was measured by a prestige score for the occupation the student indicated as that he would probably follow. They were coded using a 7 point scale originally developed by Hutchinson [1960]. The test-retest correlation coefficient for the combined sample was .46.

Evaluating Working Hypotheses:

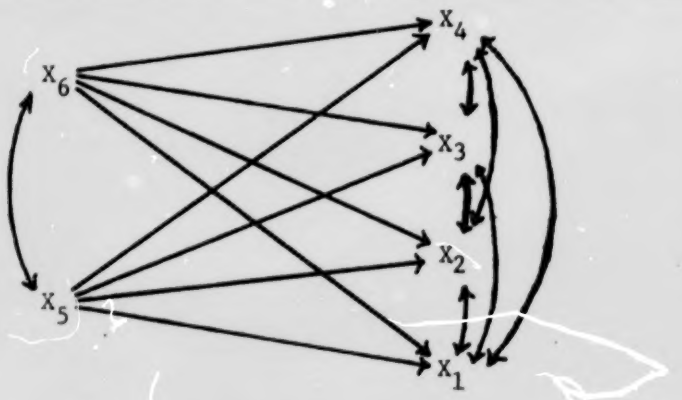
Hypotheses will be evaluated by examining coefficients associated with models presented in Figures 2 and 3. The model of Figure 2 represents the overall effects of the two exogenous variables of the Sewell et

PLACE FIGURES 2 AND 3 ABOUT HERE

al. [1970] model on the performance variables. That of Figure 3 portrays all possible relationships found between the variables of the same original model less those of status attainment.

Estimating parameters for the models will require that the usual assumptions of path analysis be met [Heise, 1969; Land, 1969]. In addition, two types of coefficients will be required, path coefficients and path regression coefficients, for as Schoenberg [1972] has argued, meaningful comparisons between samples cannot be made with standardized coefficients that do not take into account differences in sample variance for the same variables. The relative importance of SES and MA in determining performance levels within samples will be ascertained by comparing standardized

Figure 2: Model Representing Overall Effects of Socioeconomic Origin and Mental Ability on the Performance Variables



X_6 - Socioeconomic Status

X_5 - Mental Ability

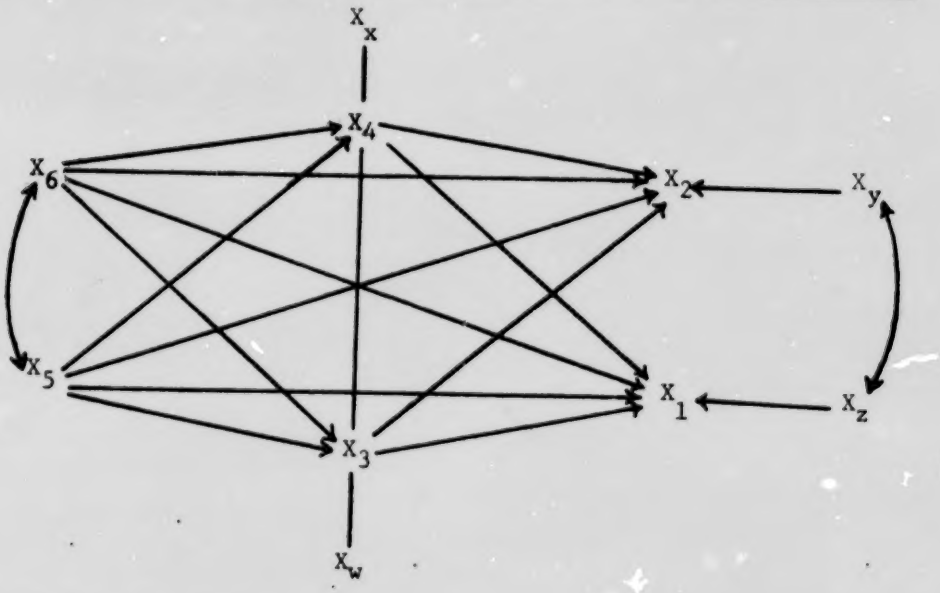
X_4 - Significant Others' Influence

X_3 - Academic Performance

X_2 - Level of Educational Aspiration

X_1 - Level of Occupational Aspiration

Figure 3: Model Representing all Possible Relationships between Variables of Sewell and Associates Model Less Attainments



X_6 - Socioeconomic Status

X_5 - Mental Ability

X_4 - Significant Others' Influence

X_3 - Academic Performance

X_2 - Level of Educational Aspiration

X_1 - Level of Occupational Aspiration

regression coefficients and will include comparisons of direct, indirect, and total effects. Between sample comparisons will include formal tests of statistical significance of differences between unstandarized regression coefficients.

The first three working hypotheses will be tested formally using a significance level of $p \leq .10$ for accepting or rejecting null hypotheses. The final working hypothesis is not subject to formal tests and will be evaluated simply by comparing effects.

Results:

Correlation matrices for the six variables under consideration and for both grade levels are found in Table 4. Those at the gymnasium level are generally higher as might be expected. Reliabilities of the measurement indices are greater for this level as older students were better able to handle the self-completed questionnaires. Older students also probably had more crystallized aspirations and perceptions of encouragement from significant others. A detailed inspection of the matrices indicates that correlations are highest among SES, SOI, and the aspiration variables. MA and AP appear to form a separate cluster, probably reflecting scholastic ability, and MA also correlates with SES at both levels.

PLACE TABLE 4 ABOUT HERE

Table 5 presents standardized and unstandardized regressions of each performance variable on SES and MA. Looking first to those on SES, it is noted that they increase rather than decrease for LOA and LEA, and the regression of LEA on SES is significantly greater at the gymnasium level. That of SOI on SES decreased slightly at the gymnasium level from .124 to .103. Finally, the difference in the regression of AP on SES was statis-

Table 4: Correlation Matrices of Model Variables for Elementary and Gymnasium Samples*

	X_1	X_2	X_3	X_4	X_5	X_6
Level of Occupational Aspiration - X_1	---	.16	.05	.10	.07	.14
Level of Educational Aspiration - X_2	.14	---	.06	.24	.00	.15
Academic Performance - X_3	.09	.03	---	.00	.19	.15
Significant Others' Influence - X_4	.13	.26	.09	---	-.02	.12
Mental Ability - X_5	.04	.04	.17	.09	---	.18
Socioeconomic Status - X_6	.21	.27	.02	.16	.30	---

* Correlations of elementary sample above diagonal; of gymnasium sample below diagonal.

tically significant and in the expected direction.

Interpreting the coefficients in a causal sense, they imply that SES is a more important determinant of aspirations at the gymnasium level than at the elementary level which is exactly opposite the original hypothesis. The effects of SES on AP and SOI, however, are smaller at the

PLACE TABLE 5 ABOUT HERE

gymnasium level with the difference in its effects on AP being significantly greater at the elementary level. Hypothesis 1, therefore, is clearly rejected for the aspiration variables. It is also rejected for the effects of SES on SOI, since the difference in effects between levels was not statistically significant.

Looking to differences between regressions of the performance variables on MA at each level, the opposite occurs for LOA and LEA. Actually, all coefficients approximate zero and none are statistically significant. Those at the gymnasium level are negative and the difference in the regression of LOA on MA for the two samples is statistically significant.

Both regression coefficients of AP on ability are statistically significant. However, the effect of MA on AP is less for the gymnasium sample. Apparently, other factors such as dedication to studies play a greater role in determining grades at this level. Neither of the regressions of SOI on MA are significant. However, the effect of MA on SOI is significantly greater at the gymnasium level than at the elementary level. Hypothesis 2 is rejected for the aspiration variables and for AP on the basis of these findings.

Table 6 summarizes data bearing on the third hypothesis that SOI and AP exercise greater causal effects on the aspiration variables at the

Table 5: Difference of Regression Effects of Background Variables on Performance Variables Between Grade Levels[1]

Performance Variables	Background Variables									
	Socioeconomic Status					Mental Ability				
	Elementary		Gymnasium		$F\ (X_{6_E} = X_{6_G})$	Elementary		Gymnasium		$F\ (X_{5_E} = X_{5_G})$
X_1	.130	(.061)*	.221	(.088)*	1.820	.050	(.015)	-.028	(-.005)	3.185*
X_2	.151	(.027)*	.282	(.040)*	3.170*	-.030	(-.003)	-.042	(-.003)	0.028
X_3	.124	(.044)*	-.035	(-.008)	14.731*	.166	(.039)*	.185	(.021)*	4.625*
X_4	.124	(.124)*	.145	(.103)*	0.283	-.039	(-.026)	.046	(.016)	3.209*

* - Significant at $p \leq .10$ Level (two tailed test)

[1] - Unstandardized regression coefficients in parentheses

X_6 - Socioeconomic Status

X_5 - Mental Ability

X_4 - Significant Others' Influence

X_3 - Academic Performance

X_2 - Level of Education Aspiration

X_1 - Level of Occupational Aspiration

gymnasium level. The regressions of LOA and LEA on SOI increase in magnitude at the gymnasium level and each is statistically significant. The same is true for the regression of LOA on AP. However, the regression of LEA on AP is of less magnitude for the gymnasium sample than for the elementary sample. Performance in the classroom actually has less

PLACE TABLE 6 ABOUT HERE

direct impact on the formation of educational aspirations at the gymnasium level than at the elementary level. Since none of the differences in coefficients between the two levels was statistically significant, the hypothesis is rejected.

Table 7 presents data bearing on the final hypothesis that MA will show a greater increase in effects on the performance variables than SES for the gymnasium level. As was already verified in Table 5, the regressions of the aspiration variables on SES are greater, and those of LOA and LEA on MA are smaller at the gymnasium level. Interpreted in light of this hypothesis, the results are the opposite of what was expected to obtain. That is, the effects of SES on LOA and LEA increased more from one level to the other. Differences between regressions of

PLACE TABLE 7 ABOUT HERE

SOI and AP on MA and SES for the two levels support the hypothesis. Clear support exists in the case of AP, as the effects of family background decreased from .124 at the elementary level to -.035 at the gymnasium level. At the same time, the effect of MA on it increased between the two levels from .166 to .185. Both standardized coefficients for the regression of SOI on MA and SES increased at the gymnasium level. However,

Table 6: Difference of Regression Effects of Significant Others' Influence and Academic Performance on the Aspiration Variables by Grade Level

Aspiration Variables	Intervening Variables									
	Significant Others' Influence					Academic Performance				
	Elementary		Gymnasium		F $(X_{4_E} = X_{4_G})$	Elementary		Gymnasium		F $(X_{3_E} = X_{3_G})$
X_1	.097	(.046)*	.129	(.072)*	0.806	.055	(.073)*	.082	(.134)*	1.283
X_2	.235	(.043)*	.262	(.053)*	1.023	.056	(.028)*	.006	(.003)	1.413

* - Significant at $p \leq .10$ level

X_4 - Significant Others' Influence

X_3 - Academic Performance

X_2 - Level of Educational Aspiration

X_1 - Level of Occupational Aspiration

Table 7: Summary of Effects of Background Variables on Performance Variables by Grade Level

Performance Variables	Effects											
	Direct				Indirect				Total			
	Elementary		Gymnasium		Elementary		Gymnasium		Elementary		Gymnasium	
	X_6	X_5	X_6	X_5	X_6	X_5	X_6	X_5	X_6	X_5	X_6	X_5
X_1	.1160	.0480	.2100	-.0490	.0362	.0001	.0376	.0131	.1522	.0481	.2476	-.0359
X_2	.1180	-.0290	.2500	-.0540	.0189	.0054	.0151	.0201	.1369	-.0236	.2651	-.0339
X_3	.1240	.1660	-.0350	.1850	--	--	--	--	.1240	.1660	-.0350	.1850
X_4	.1240	-.0390	.1450	.0460	--	--	--	--	.1240	-.0390	.1450	.0460

X_6 - Socioeconomic Status

X_5 - Mental Ability

X_4 - Significant Others' Influence

X_3 - Academic Performance

X_2 - Level of Educational Aspiration

X_1 - Level of Occupational Aspiration

the increase was greater in the case of MA (.0850), further supporting the hypothesis.

Indirect effects obtain only between the background and aspiration variables through SOI and AP,[7] and in both cases support the hypothesis. For LOA, the indirect effects of both SES and MA increased, although the difference between levels is greater for MA. Stronger support is given to the hypothesis for LEA, as the indirect effects of MA on LEA increased and those of SES on LEA decreased.

The pattern of changes in total effects, i.e., the sum of the direct and indirect effects is identical to that of the direct effects. On the basis of these findings, the fourth hypothesis is rejected insofar as it refers to the direct effects of MA and SES on the aspiration variables. It is accepted for the indirect effects of MA and SES on them and for the direct effects of MA and SES on SOI and AP.

Summary and Conclusions:

As a means of summarizing these data, the models presented in Figures 2 and 3 are presented again as path models together with the estimated parameters for these samples.

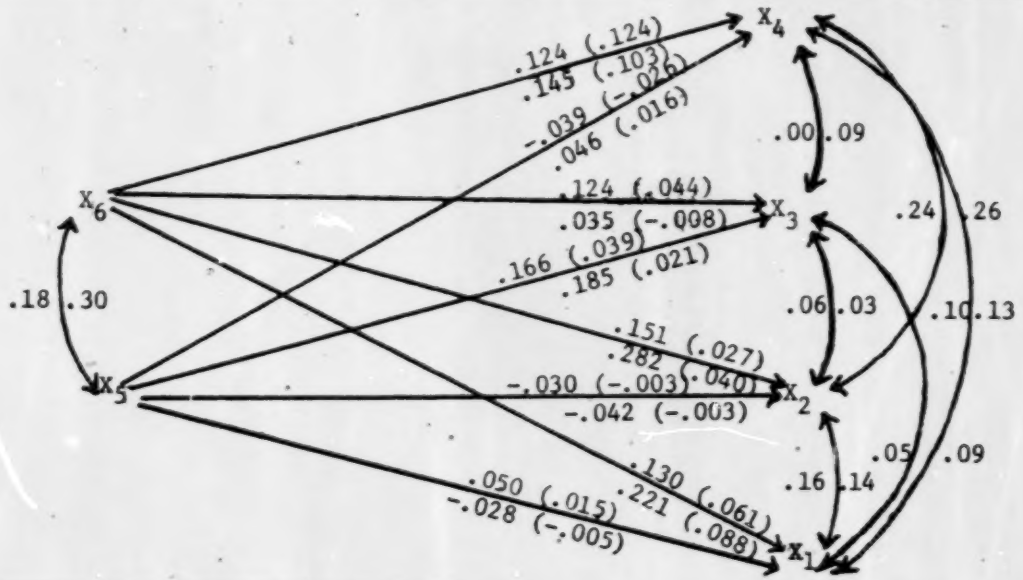
First, looking to Figure 4, several affirmations can be made regarding the effects of SES and MA on the performance variables. Since changes in their effects are the same for the two aspiration variables, and for SOI and AP, they will be summarized in terms of these two clusters. SOI

PLACE FIGURE 4 ABOUT HERE

and AP are similar to one another in that both variables reflect a feed-

[7] Computations are found in the appendix.

Figure 4: Path Model Representing Overall Effects of Socioeconomic Status and Mental Ability on Performance Variables with Coefficients for Both Samples



* Path regression coefficients in parentheses
** Coefficients for gymnasium sample below and to right of lines

X_6 - Socioeconomic Status

X_5 - Mental Ability

X_4 - Significant Others' Influence

X_3 - Academic Performance

X_2 - Level of Educational Aspiration

X_1 - Level of Occupational Aspiration

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back process to the student of how others view his potential for future performance in the educational system. The Sewell and associates model assumes that they are "caused" by SES and MA and that they in turn "determine" the aspiration levels.

1 - Contrary to hypothesis 1, the effects of SES on aspirations increase from the elementary to the gymnasium level.

2 - Contrary to hypothesis 2, the effects of MA on aspirations decrease from the elementary to the gymnasium level.

3 - In support of hypothesis 1, the effects of SES on the feedback variables decrease from the elementary to the gymnasium level.

4 - In support of hypothesis 2, the effects of MA on the feedback variables increase from the elementary to the gymnasium level.

The data on hand give no indication why aspirations become more a function of family origin and less of mental ability at the gymnasium level. Several highly speculative reasons suggest themselves. In the first place, those of lower status families were probably employed while continuing their studies. Most were attending night classes, many of which do not offer standard academic curriculums. They may have had more immediate purposes in attending such as improving their positions in whatever organization they were employed. If so, this would imply not aspiring to the most prestigious professional and business occupations, nor to the required years of academic training.

They would probably also have been more realistic about their own chances of obtaining more prestigious occupations and the required schooling, given the adverse conditions under which they were continuing their educational endeavors. Students from higher status families, on the other hand, were probably not working and were probably receiving a

more traditional type of academic training. Since they could count on family support for continued studies to a greater degree than their counterparts, their aspirations were probably higher. In sum, there was probably a greater degree of correspondence between family status and aspirations at this level due to experiences the students had obtained outside the classroom.

PLACE FIGURE 5 ABOUT HERE

Turning to Figure 5, several summary statements can be formulated:

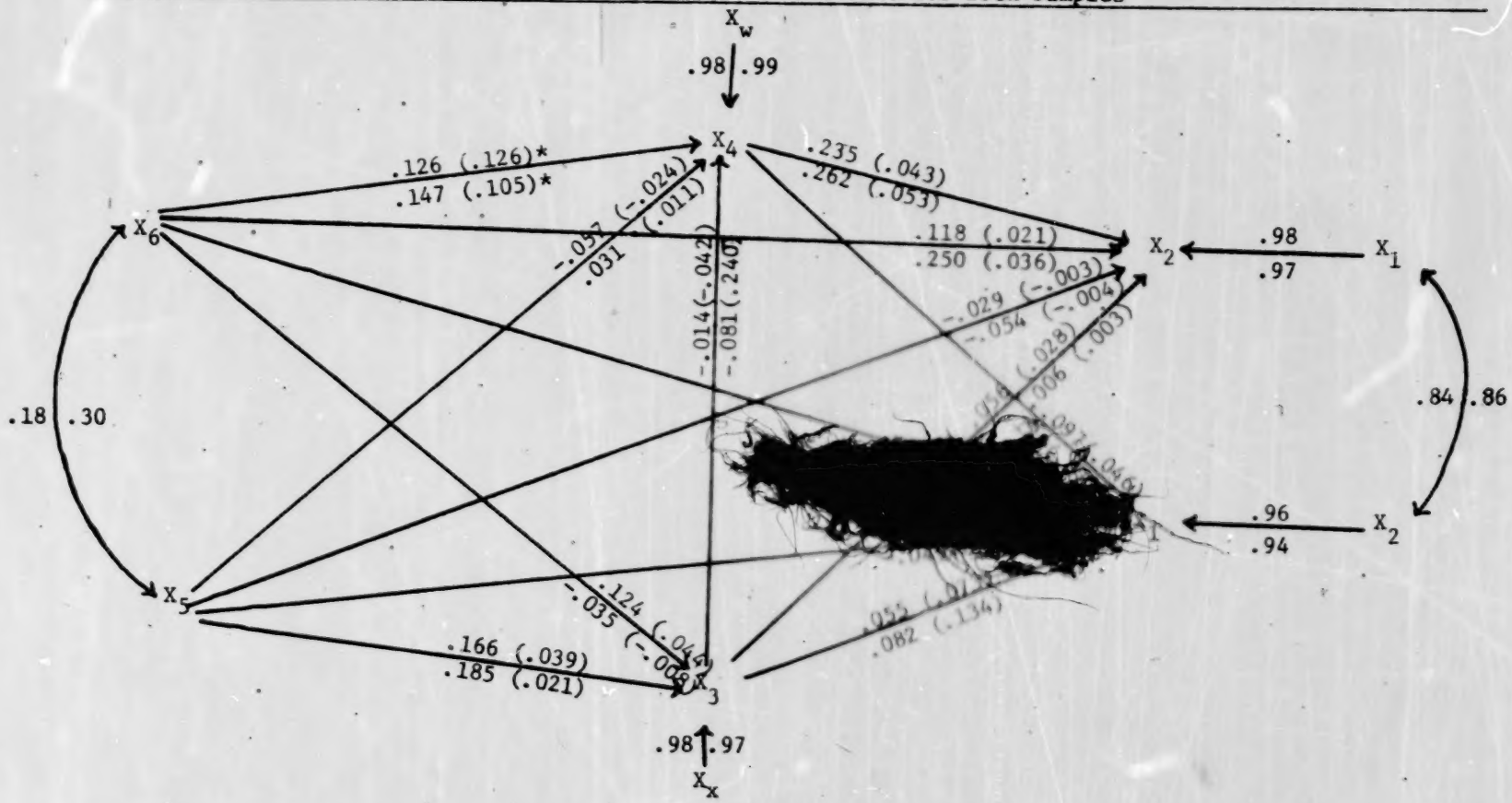
1. The intervening role of SOI and AP which was postulated in the Sewell et al. model is much less pronounced for these samples. The direct effects of SES on aspirations are substantially greater than the indirect effects. Whereas MA has practically no direct effects on them, its indirect effects are also rather small. In comparing the size of indirect effects between the elementary and gymnasium samples, those of SES on aspirations and mediated only by SOI increase. Those mediated by AP appear not to change much and are negative at the gymnasium level. Indirect effects of MA on aspirations are greater at the gymnasium level.

2. SOI transmits positive effects of SES on aspirations at both levels, although those routed previously through academic performance are negative. On the other hand, AP transmits positive effects of MA to them at both levels as does SOI, both directly from MA and through AP.

3. Classroom performance as measured by grades has a rather small effect on aspirations at both levels. Path coefficients between aspirations and SOI are larger in all instances.

4. SOI's effects on LOA and LEA increase at the gymnasium level and those of AP on them decrease. Although none of the differences were

Figure 5: Path Model Representing All Possible Relationships Between Variables of Sewell and Associates Model Less Attainments and Coefficients for Both Samples



* Path regression coefficients in parentheses
** Coefficients for gymnasium sample below and to right of lines

X_6 - Socioeconomic Status

X_5 - Mental Ability

X_4 - Significant Others' Influence

X_3 - Academic Performance

X_2 - Level of Educational Aspiration

X_1 - Level of Occupational Aspiration

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statistically significant, they run counter to the notion of increasing importance accruing to achievement factors in determining status as one advances in the school system, at least insofar as aspirations are involved in this process.

In reviewing possible causal relationships between variables of the original model, several tentative conclusions can be formulated.

1 - Clearly, family origin is the more important determinant of aspirations, both directly and indirectly. Also evident is its increasingly dominant role at the gymnasium level. One possible reason for this, which was already discussed, is that occupational and educational decisions become more relevant to students as they mature. That is, students become more realistic about their chances for obtaining more schooling and more prestigious jobs. Since most in these samples had greater access only to paid community colleges in their residence locales or surrounding communities, increased realism probably means a greater awareness of the importance of financial support their family might give them in continuing their education; of the difficulties of financing their continued studies individually; and of the types of occupations they might expect to obtain through family ties and level of education attained.

2 - The data do not show SES and MA to be good explainers of variables in the model as they only explain between 2 and 12 percent of their total variance. However, the indicators employed were only moderately reliable and attenuations due to measurement may be a major explanation of the lower coefficients. Another factor which may explain the lower correlations is the pooling of males and females in the sample. It is known that sex roles vary greatly in the U.S., particularly with respect to participation in the occupational structure. It is probable that

their variation is even greater in Brazil, with females having even less access to more prestigious occupations and to a college education.[8]

3 - While it has been demonstrated that aspirations are largely a function of family origin, and that its importance increases from elementary to secondary levels, no conclusions can be reached regarding the importance of origin and ability on educational and occupational status attainment. Should no direct effects obtain between them and the attainment variables, the magnitude of their causal roles would, of course, remain constant. This is postulated in the Sewell et al. model. However, these data showed important direct effects of SES on aspirations to obtain, and it is possible that direct effects to the attainment variables exist.

In one study of Latin American youth, it was shown that AP had a sizable direct effect on levels of educational attainment [Hansen and Haller, 1973]. Further, those data did not show any important direct effects of family origin on attainments. These findings suggest that ability, as measured by IQ and grades, may be of even greater import than family origin in determining levels of status attainment at the secondary school level, and that its role may increase as students progress through the educational system. To evaluate this phase of the educational process for the sample under consideration requires that follow-up studies be conducted.

[8] Correlation matrices for the two samples and corrected for attenuations due to measurement are presented in the appendix.

Appendix

Correlation Matrix Corrected for Attenuation of Model Variables Elementary and Gymnasium Samples*

		X_1	X_2	X_3	X_4	X_5	X_6
Occupational Aspiration	- X_1	---	.35	.12	.32	.10	.21
Educational Aspiration	- X_2	.39	---	.05	.72	.00	.28
Academic Performance	- X_3	.17	.07	---	.00	.16	.17
Significant Others' Influence	- X_4	.31	.50	.12	---	-.04	.25
Mental Ability	- X_5	.08	.07	.19	.13	---	.22
Socioeconomic Status	- X_6	.31	.50	.02	.23	.36	---

* - Correlations of elementary sample above diagonal; correlations of gymnasium sample below diagonal.

Appendix

Means and Standard Deviations of Study Variables by Grade Level

	Grade Level			
	Elementary		Gymnasium	
Variables	$\bar{X}$	σ	$\bar{X}$	σ
Socioeconomic Status	-0.523	2.941	0.824	3.409
Mental Ability	8.097	4.943	15.200	7.103
Significant Others' Influence	-0.384	2.936	0.431	2.427
Academic Performance	7.065	1.042	7.037	0.824
Educational Aspiration	1.652	0.532	1.719	0.489
Occupational Aspiration	4.499	1.384	4.907	1.357

Summary of Effects of Background Variables on Performance Variables

Elementary Sample	Total Effect	=	Direct Effect	+	Indirect Effect
P_{61}	.1522	=	.116	+	(.235) (-.014) (.124) + (.056) (.124) + (.235) (.126) = .0362
P_{62}	.1369	=	.118	+	(.097) (-.014) (.124) + (.055) (.124) + (.097) (.126) = .0189
P_{51}	.0481	=	.048	+	(.235) (-.014) (.166) + (.056) (.166) + (.235) (.037) = .0001
P_{52}	-.0236	=	-.029	+	(.097) (-.014) (.166) + (.055) (.166) + (.971) (-.037)= .0054
Gymnasium Sample					
P_{61}	.2476	=	.210	+	(.262) (.081) (-.035) + (.006) (-.035) + (.262) (.147)= .0376
P_{62}	.2651	=	.250	+	(.129) (.081) (-.035) + (.082) (-.035) + (.124) (.147)= .0151
P_{51}	-.0359	=	-.049	+	(.262) (.081) (.185) + (.006) (.185) + (.262) (.031) = .0131
P_{52}	-.0339	=	-.054	+	(.082) (.081) (.185) + (.082) (.185) + (.124) (.031) = .0201

X_6 - Significant Others' Influence

X_5 - Mental Ability

X_2 - Level of Educational Aspiration

X_1 - Level of Occupational Aspiration

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